



TI2580

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## Using KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 and E-6AR, Part A

### General Description

KODAK PROFESSIONAL Color Developer Replenisher Part A for Process E-6 and Process E-6AR is a reformulated solution that significantly reduces or eliminates the need for additions of hydroxide (e.g., 5N sodium hydroxide, NaOH) to the color developer. This product is used with existing KODAK PROFESSIONAL Color Developer Replenisher, Part B. When preparing fresh tank solutions from this product, it is necessary to use the new KODAK PROFESSIONAL Color Developer Starter II, Process E-6.

In the United States and Canada, the product is supplied in the following sizes:

KODAK PROFESSIONAL Color Developer Replenisher, Process E-6AR Part A (to make 25 gal.), CAT 840 2224 (replaces CAT 877 9035)

**Note:** Fresh tank solutions prepared from KODAK PROFESSIONAL Color Developer Replenisher must use KODAK PROFESSIONAL Color Developer Starter II, U.S. CAT 185 8158.

In Europe and Asia, the product is supplied in the following sizes:

KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 (60L drum), CAT 528 0177 (replaces CAT 526 4825)

KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 (2 x 20L), CAT 528 0151 (replaces CAT 525 7035 in Europe and CAT 524 6236 in Asia)

KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 (2 x 5L), CAT 528 0144 (replaces CAT 525 7027 in Europe and CAT 525 3984 in Asia)

KODAK PROFESSIONAL Color Developer Replenisher, Process E-6AR Part A (to make 100 L), CAT 528 0169 (replaces CAT 525 7043)

**Note:** Fresh tank solutions prepared from KODAK PROFESSIONAL Color Developer Replenisher must use KODAK PROFESSIONAL Color Developer Starter II, European and Asian CAT 528 1589.

- When converting to KODAK PROFESSIONAL Color Developer Replenisher, it is not necessary to replace the current color developer working tank and replenisher solutions; the new solution can be replenished on top of the existing working tank solution.
- There are no required changes to color developer mixing or replenishment procedures other than a reduction in the customary additions of hydroxide.
- For a process to which little or no hydroxide was added before conversion to this product, minor additions of acid may be necessary for color balance control.

Physical characteristics: The concentrate is normally a clear, yellowish, odorless solution.

See "Mixing" and "Process Control" for changes recommended when using this product.

### Processors

No changes are required on equipment currently using KODAK Color Developer Replenisher, Process E-6 or Process E-6AR.

## Mixing

**Notice:** Observe precautionary information on product labels and on Material Safety Data Sheets when using any chemicals.

Mix solutions according to the instructions packaged with the chemicals, or as detailed below. Mixing instructions are provided below for preparing a replenisher or fresh tank solution using KODAK PROFESSIONAL Color Developer Replenisher, Part A. Other fresh tank solution preparations do not change.

When preparing a replenisher or fresh tank solution, mix thoroughly until the solution is uniform. Do not overmix or mix so vigorously that foaming or solution vortexing occurs.

Immediately after mixing, the color developer solution will appear blue or purple. The coloration is normal and will change to pale yellow within a short period of time (several hours).

For best results, do not use pre-mixed replenisher that has been stored for longer than 8 weeks.

### To Prepare a Working-Strength Replenisher:

Using KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 or E-6AR, start with water at 68 to 104°F (20 to 40°C) and add the Part A and Part B separately with stirring. For each litre of tank solution required, use the following amounts:

CAT 528 0151 (2 x 20L)	750 mL of water, add 200 mL of Part A first, then add 50 mL of Part B.
All other sizes/CAT Nos.	600 mL of water, add 200 mL of Part A first, then add 200 mL of Part B.

### To Prepare a Fresh Tank Solution:

Follow either procedure I or II:

#### I. From Pre-Mixed Replenisher:

For each litre of tank solution, mix 850 mL of replenisher with 150 mL of water. Add 5 mL of KODAK PROFESSIONAL Color Developer Starter II, Process E-6, per litre of tank solution and mix.

#### II. From Color Developer Replenisher, Part A and Part B

Using KODAK PROFESSIONAL Color Developer Replenisher, Process E-6 or E-6AR, start with water at 68 to 104°F (20 to 40°C) and add the Part A and Part B separately with stirring. For each litre of replenisher required, use the following amounts:

CAT 528 0151 (2 x 20L)	787.5 mL of water, add 170 mL of Part A first, then add 42.5 mL of Part B.
All other sizes/CAT Nos.	660 mL of water, add 170 mL of Part A first, then add 170 mL of Part B.

Add 5 mL of KODAK PROFESSIONAL Color Developer Starter II, Process E-6, per litre of tank solution and mix.

**Hydroxide Adjustment:**

Color developer replenisher and working-tank solutions prepared from the new Part A will require less hydroxide than those prepared from the older formula. The reduction in the customary addition to the older product is approximately equal to 2.5 mL of 5N sodium hydroxide (NaOH) or potassium hydroxide (KOH)<sup>1</sup> per litre of replenisher used. This amount should be used as a guideline when first converting to the new Part A; a minor additional adjustment for optimum color balance may be required (see "Process Control" for further information).

**For Additions Made to the Replenisher:**

The following table shows the recommended adjustments to various replenisher volumes when converting from the older product to the new product. When hydroxide additions are made to the AR concentrate container in in-line dilution/automatic replenishment systems, deduct the adjustment for 25 gallons of replenisher from the volume previously added to each container of the older product.

Replenisher Volume	Decrease in 5N NaOH with Conversion
1 litre	2.5 mL
1 gallon (3.8 litres)	9.5 mL
10 litres	25 mL (0.85 fl oz)
25 gallons (95 litres)	237 mL (8.0 fl oz)
100 litres	250 mL (8.5 fl oz)

**For Additions to the Processor Tank Solution:**

For processor tank additions, divide the amount of hydroxide added by the liters of replenisher used during the interval for which the addition was made. Then deduct 2.5 mL of 5N hydroxide per liter of replenisher for the newer product.

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<sup>1</sup>5N hydroxide solutions contain 200 grams of sodium hydroxide per litre, or 281 grams of potassium hydroxide per litre. For instructions on preparing these solutions, refer to KODAK Publication No. Z-119, "Using KODAK Chemicals, Process E-6."

**Example:**

When replenisher was prepared from the previous product, the average additions of 5N NaOH per week totaled 250 mL. The amount of replenisher used during one week averaged 25 gallons (95 liters). Therefore, the recommended addition per week after converting to the newer Part A is found by the following calculations:

$$200 \text{ mL} / 95 \text{ L} = 2.6 \text{ mL/L}$$

$$\text{Recommended addition rate} = 2.6 \text{ mL/L} - 2.5 \text{ mL/L} = 0.1 \text{ mL/L}$$

$$\text{Recommended weekly addition} = 0.1 \text{ mL/L} \times 95 \text{ L} = 9.5 \text{ mL per week}$$

**Specific Gravity Aims**

Parameter	Aim	Tolerance
Fresh Tank Solution	1.034 at 80°F (27°C) 1.031 at 100°F (38°C)	+/- 0.003
Replenisher	1.040 at 80°F (27°C) 1.037 at 100°F (38°C)	+/- 0.003
Seasoned Tank Solution	1.038 at 80°F (27°C) 1.035 at 100°F (38°C)	+/- 0.003

**Note:** Other Process E-6 solution specific gravity values are found in KODAK Publication No. Z-119, "Using KODAK Chemicals, Process E-6," or in KODAK Publication No. Z-6, "KODAK Q-LAB Process Control Handbook."

**Processing**

No changes to current process specifications are required.

**Replenishment**

The replenishment rate for the new color developer is the same as for the older solution. Replenishment rates, based on mL/sq m or mL/sq ft of film processed, are given below. For rack and tank processors, calculate replenishment rates per rack according to the distribution of film sizes processed.

**Replenishment Rates for Pre-Mixed Replenisher**

**Flow Rates or Replenishment Rates  
 for Nominal Process E-6 Cycle**

per sq m	per sq ft
2153 mL	200 mL

### Replenishment Rates for In-Line Dilution Systems

Flow Rates or Replenishment Rates for Nominal Process E-6 Cycle

per sq m			per sq ft		
Part A	Part B	Water	Part A	Part B	Water
431 mL	431 mL	1291 mL	40 mL	40 mL	120 mL

### Process Control

If the yellow-to-blue color balance is out of control, it can be corrected by adjustment of the pH of the color developer with additions of hydroxide when the color balance is blue, and sulfuric or acetic acid when the color balance is yellow. This should be the last adjustment made in optimizing a process.

To shift the color balance in the yellow direction, increase the pH by adding sodium or potassium hydroxide (NaOH or KOH) to the color developer. As a guideline, use 1 mL of 5N NaOH or KOH per litre of tank solution to change the color balance by 0.05 density units at HD.

To shift the color balance in the blue direction, decrease the pH by adding sulfuric acid (H<sub>2</sub>SO<sub>4</sub>) or acetic acid to the color developer. As a guideline, use 1 mL of 5N H<sub>2</sub>SO<sub>4</sub><sup>2</sup> or KODAK 28% Acetic Acid (CAT 146 2829) per litre of tank solution to change the color balance by 0.05 density units at HD.

**Caution:** Sodium hydroxide, potassium hydroxide, sulfuric acid and acetic acid are corrosive; avoid contact with skin and clothing. Wear safety goggles, rubber gloves and protective clothing.

If you have questions or need assistance, contact your local Kodak representative.

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**End of Instruction Sheet**

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<sup>2</sup>5N sulfuric acid contains 139 mL of concentrated sulfuric acid per litre. For instructions on preparing this solution, refer to KODAK publication No. Z-119, "Using KODAK Chemicals, Process E-6."